AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) A system to determine signal time of arrival in a wireless communication system, comprising:

a searcher configured to analyze received signals to determine a correlation signal levels at predetermined points in time, the searcher configured to determine a maximum signal level at a selected one of the predetermined points in time; and

a modeling processor configured to generate a second order polynomial mathematical model of a predetermined response function using the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time, the modeling processor configured to determine a time associated with a peak correlation signal level based on the mathematical model, and further configured to determine a time of arrival of the received signals based on the time associated with the peak correlation signal level, an offset time encoded in the received signals, the mathematical model, and an iterative algorithm that avoids a division operation.

2. (Original) The system of claim 1 wherein the correlation signal levels are based on received signal strength of the received signals.

3. (Currently Amended) The system of claim 1 wherein the maximum signal level at the selected one of the predetermined points in time and the correlation signal levels from the predetermined points in time adjacent the selected one of the predetermined points in time are used to determine coefficients in the mathematical model.

4. (Currently Amended) The system of claim 3 wherein the coefficients in the mathematical model are used to determine the time associated with a the peak value correlation signal level based on of the mathematical model.

5. (Canceled)

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6. (Currently Amended) The system of claim 1 wherein the mathematical model is a second-order mathematical function with three coefficients, and wherein the modeling processor is configured to determined the three coefficients in the mathematical model based on the maximum signal level at the selected one of the predetermined points in time and two correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time being used to determine the three coefficients in the mathematical model.

7. (Original) The system of claim 1 wherein the mathematical model is a quadratic function having the form: $y(x)=ax^2+bx+c$.

8. (Currently Amended) The system of claim 7 wherein the modeling process is configured to determine coefficients in the mathematical model based on the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time are used to determine coefficients in the mathematical model.

9. (Currently Amended) The system of claim 8 wherein the modeling processor is configured to determine a time associated with the peak correlation signal based on the coefficients in the mathematical model are used to determine a time associated with a peak value of the mathematical model.

10. (Currently Amended) A system to determine signal time of arrival in a wireless communication system, comprising:

a searcher configured to analyze received signals to determine a correlation signals level at predetermined points in time, the searcher configured to determine a maximum signal level at a selected one of the predetermined points in time; and

a modeling processor configured to generate an nth order polynomial, n being greater than two, mathematical model of a predetermined response function based on the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time, the modeling processor configured

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to determine a time associated with a peak correlation signal level based on the mathematical model, and configured to determine ~~the~~ coefficients in the mathematical model based on the maximum signal level and correlation signal levels from predetermined points in time adjacent the selected <u>one of the predetermined points in time, and wherein the modeling processor is further configured to determine a time of arrival of the received signals based on at least the time associated with the peak correlation signal</u>.

11. (Currently Amended) A system for determining signal time of arrival in a wireless communication system, comprising:

analysis means for analyzing received signals to determine ~~a~~ correlation signal level<u>s</u> at predetermined points in time and for determining a maximum signal level at a selected one of the predetermined points in time; and

modeling means for generating a second-order mathematical model of a predetermined response function based on the maximum signal level <u>at the selected one of the predetermined points in time</u> and correlation signal levels from predetermined points in time adjacent the selected <u>one of the predetermined points in time</u>, determining a time associated with a peak correlation signal level based on the mathematical model, and further for determining a time of arrival of the received signals based on the time associated with the peak correlation signal level, an offset time encoded in the received signals, the mathematical model and an iterative algorithm that avoids a division operation.

12. (Original) The system of claim 11 wherein the correlation signal levels are based on received signal strength of the received signals.

13. (Currently Amended) The system of claim 11 wherein the modeling means uses the maximum signal level <u>at the selected one of the predetermined points in time</u> and correlation signal levels from predetermined points in time adjacent the selected <u>one of the predetermined points in</u> time to determine coefficients in the mathematical model.

14. (Currently Amended) The system of claim 13 wherein the coefficients in the mathematical model are used to determine the time associated with a-the peak value correlation signal level based on of the mathematical model.

15. (Cancelled)

16. (Currently Amended) A system for determining signal time of arrival in a wireless communication system, comprising:

analysis means for analyzing received signals to determine a correlation signal level at predetermined points in time and for determining a maximum signal level at a selected one of the predetermined points in time; and

modeling means for generating an nth order mathematical model, n being greater than two, of a predetermined response function using the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time, the mathematical model being used configured to determine a time associated with a peak correlation signal level and further for determining a time of arrival of the received signals based on at least the time associated with the peak correlation signal.

17. (Currently Amended) A method for determining signal time of arrival in a wireless communication system, comprising:

analyzing received signals to determine a correlation signal levels at predetermined points in time;

determining a maximum signal level at a selected one of the predetermined points in time;

generating a second order mathematical model of a predetermined response function using the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time;

using the mathematical model to determine determining a time associated with a peak correlation signal level based on the mathematical model;

determining an offset time encoded within the received signals, the offset time identifying a source of the received signals; and

determining a time of arrival of the received signals based on the time associated with the peak correlation signal level, the offset time, the mathematical model and an iterative algorithm that avoids a division operation.

18. (Original) The method of claim 17 wherein the correlation signal levels are based on received signal strength of the received signals.

19. (Currently Amended) The method of claim 17 wherein the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time are used to determine coefficients in the mathematical model.

20. (Currently Amended) The method of claim 19 wherein the coefficients in the mathematical model are used to determine the time associated with a the peak value correlation signal level based on of the mathematical model.

21. (Canceled)

22. (Currently Amended) The method of claim 17 wherein coefficients in the second-order mathematical function are used to determine the time associated with a the peak value of correlation signal level based on the mathematical model.

23. (Currently Amended) A method for determining signal time of arrival in a wireless communication system, comprising:

analyzing received signals to determine a correlation signal levels at predetermined points in time;

determining a maximum signal level at a selected one of the predetermined points in time;

generating an nth order mathematical model, n being greater than two, of a predetermined response function using the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from

predetermined points in time adjacent the selected one of the predetermined points in time; and

~~using the mathematical model to determine~~determining a time associated with a peak correlation signal level based on the mathematical model, and determining coefficients of the mathematical model based on the maximum signal level at the selected one of the predetermined points in time and correlation signal levels from predetermined points in time adjacent the selected one of the predetermined points in time, and determining a time of arrival of the received signals based at least on the time associated with the peak correlation signal level ~~being used to determine coefficients in the mathematical model~~.

24.   (Previously Presented) The system of claim 1, wherein the offset time encoded in the received signals identifies a source of the received signals.

25.   (Previously Presented) The system of claim 1, further comprising a timer configured to provide system time used to measure the offset time.

26.   (Canceled)